

UNITED STATES PATENT OFFICE.

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CIRCUIT-BREAKER FOR IGNITION SYSTEMS.

1,244,155.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JOSEPH A. WILLIAMS, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented a certain new and useful Improvement in Circuit-Breakers for Ignition Systems, of which the following is a full, clear, and exact description.

10 This invention relates to circuit breakers or timers for ignition systems and has for its object to provide an efficient circuit breaker adapted particularly for, but not necessarily confined to, so-called battery ignition systems wherein igniting current is supplied by a battery or by a battery and generator.

More specifically considered, the invention aims to provide a circuit breaker which is exceedingly quick in action and is so constructed that the contacts are closed almost instantaneously when released or permitted to close by the cam without being delayed by lag or effects of inertia of the various parts and are then quickly opened after they have been in engagement a predetermined interval of time.

Further, the invention aims to provide a circuit breaker having the above characteristics, and additionally is so constructed that the dwell or period of time that the contacts are in engagement is not affected by the speed of operation of the engine,—in other words, that the contacts will remain in engagement for the same period of time at high engine speeds as well as low engine speeds.

A still further object is to provide a circuit breaker which is so constructed that the contacts can not be left in engagement when the engine stops or comes to rest; therefore the primary ignition circuit can not be left closed when the engine stops.

The invention may be briefly summarized as consisting in certain novel details of construction and combinations and arrangements of parts which will be described in the specification and set forth in the appended claims.

10 In the accompanying sheets of drawings wherein I have shown two of several different forms in which my invention may be embodied, Figure 1 is a face view of the principal parts of the circuit breaker in one of the embodiments of the invention, the parts being shown with the contacts open

but on the point of being closed; Fig. 2 is a similar view showing the same immediately after the circuit breaker is closed; Fig. 3 is a similar view after the circuit breaker is opened or the contacts separated; Fig. 4 is a sectional view substantially along the line 4—4 of Fig. 1 looking in the direction indicated by the arrows and showing in addition to the circuit breaker a distributor which may be associated with and act in conjunction with the circuit breaker; Fig. 5 is a view similar to Fig. 1 showing a modification; Fig. 6 is a view similar to Fig. 2 showing the construction of Fig. 5; Fig. 7 is a view similar to Fig. 3 of the same construction shown in Figs. 5 and 6; Fig. 8 is a view similar to Fig. 4 of the construction shown in Figs. 5, 6 and 7.

Referring first to the construction shown in Figs. 1 to 4, 10 represents the operating shaft which is provided with a cam, substantially in the form of a ratchet, this cam being provided on its periphery with teeth 11^a, or with spiral or tapered peripheral cam portions or projections terminating in abrupt teeth which are preferably undercut, as shown, each spiral or tapered cam portion extending from the base of one tooth to the point of the next adjacent tooth. In this case the circuit breaker is designed for a four cylinder engine, inasmuch as the cam is provided with four such teeth or peripheral cam portions. It will be understood, of course, that the number of peripheral teeth or cam portions which are provided will depend on the number of cylinders for which the circuit breaker is intended to be used.

Mounted upon a plate 12, which may be and preferably is a part of the casing which incloses the operating parts of the circuit breaker and of the distributor as shown in Fig. 4, is supported a stationary contact member 13 carrying at its lower or inner end a contact point 14. This contact member 13 is adjustably mounted in a member 15 which is insulated from the casing or from plate 12.

The movable contact 16 which is designed to move into and out of engagement with the stationary contact or contact point 14 is carried by a small lever 17 which is pivoted between its ends on a pin or stud 18 carried by a movable or yieldable supporting member 19, which, in the construction shown in Figs. 1 to 4, is in the form of a lever pivoted on a pin or stud 20 to the plate 12 of the cas-